UNDERWATER BRIDGE INSPECTION REPORT

STRUCTURE NO. 27554

CSAH NO. 12

OVER THE

CROW RIVER

DISTRICT 5 – HENNEPIN COUNTY

PREPARED FOR THE

MINNESOTA DEPARTMENT OF TRANSPORTATION

BY

COLLINS ENGINEERS, INC.

JOB NO. 3512 (CEI 108)

MINNESOTA DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

REPORT SUMMARY:

The substructure units inspected at Bridge No. 27554, Piers 1 and 2, were found to be in good condition with no significant structural defects observed. A heavy accumulation of timber debris was observed upstream of Pier 2, and there was also a large tree on the channel bottom at Pier 1. The footing exposure at Pier 1 has increased since the last inspection to include up to 2 feet of vertical exposure of the seal coat below the footing at Pier 1.

INSPECTION FINDINGS:

(A) The top of footing was completely exposed around Pier 1 with 2 to 2.5 feet of vertical exposure along the west face and downstream end. The seal coat under the footing was exposed at the upstream end (full 4 foot height of footing exposed), to the 1/4 point on the west face and to the midpoint of the east face, with a maximum vertical face exposure of 2 feet at the upstream nose.

(B) A tree trunk was observed at the upstream end of Pier 1 with 10-inch-diameter branches extending along both faces of the pier. A heavy accumulation of timber debris was also observed upstream of Pier 2 on a sandbar that surrounded part of the pier.

RECOMMENDATIONS:

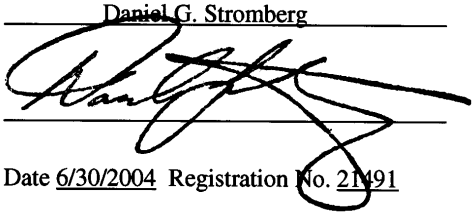
(A) Remove the timber drift that has accumulated around the piers including the tree on the channel bottom at Pier 1, which could be contributing to scour and footing exposure.

(B) Monitor footing exposure at Pier 1 during future underwater inspections.

(C) Reinspect the submerged substructure at the normal maximum recommended (NBIS) interval of five (5) years.

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

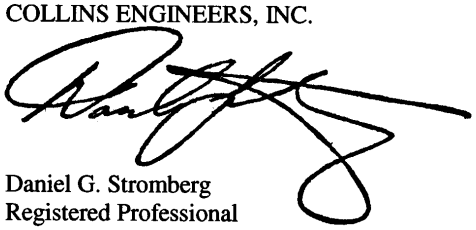
Daniel G. Stromberg



Date 6/30/2004 Registration No. 21491

Respectfully submitted,

COLLINS ENGINEERS, INC.



Daniel G. Stromberg
Registered Professional
Engineer, State of Minnesota

MINNESOTA DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

1. BRIDGE DATA

Bridge Number: 27554

Feature Crossed: The Crow River

Feature Carried: CSAH 12

Location: District 5 - Hennepin County

Bridge Description: The superstructure consists of three spans of a concrete deck on multiple precast concrete girders. The superstructure is supported by two concrete piers and two concrete abutments, all of which are founded on timber piling. The piers are numbered 1 and 2 starting from the west end of the bridge.

2. INSPECTION DATA

Professional Engineer/Team Leader: Shirley M. Walker, P.E.

Dive Team: Michelle D. Koerbel, Clayton G. Brookins

Date: September 24, 2002

Weather Conditions: Cloudy, " 55E F

Underwater Visibility: "0.5 Feet

Waterway Velocity: "2.0 f.p.s.

3. SUBSTRUCTURE INSPECTION DATA

Substructure Inspected: Piers 1 and 2.

General Shape: Each pier consists of an oblong rectangular shaft with rounded noses that rest upon a rectangular footing founded on timber piling.

Maximum Water Depth at Substructure Inspected: Approximately 9.5 Feet.

4. WATERLINE DATUM

Water Level Reference: The top of the concrete parapet wall, above the north end of Pier 2.

Water Surface: The waterline was approximately 27.5 feet below reference.
Waterline Elevation = 843.5.

5. NBIS CODING INFORMATION (Minnesota specific codes are used for 92B and 113)

Item 60: Substructure: Code 7

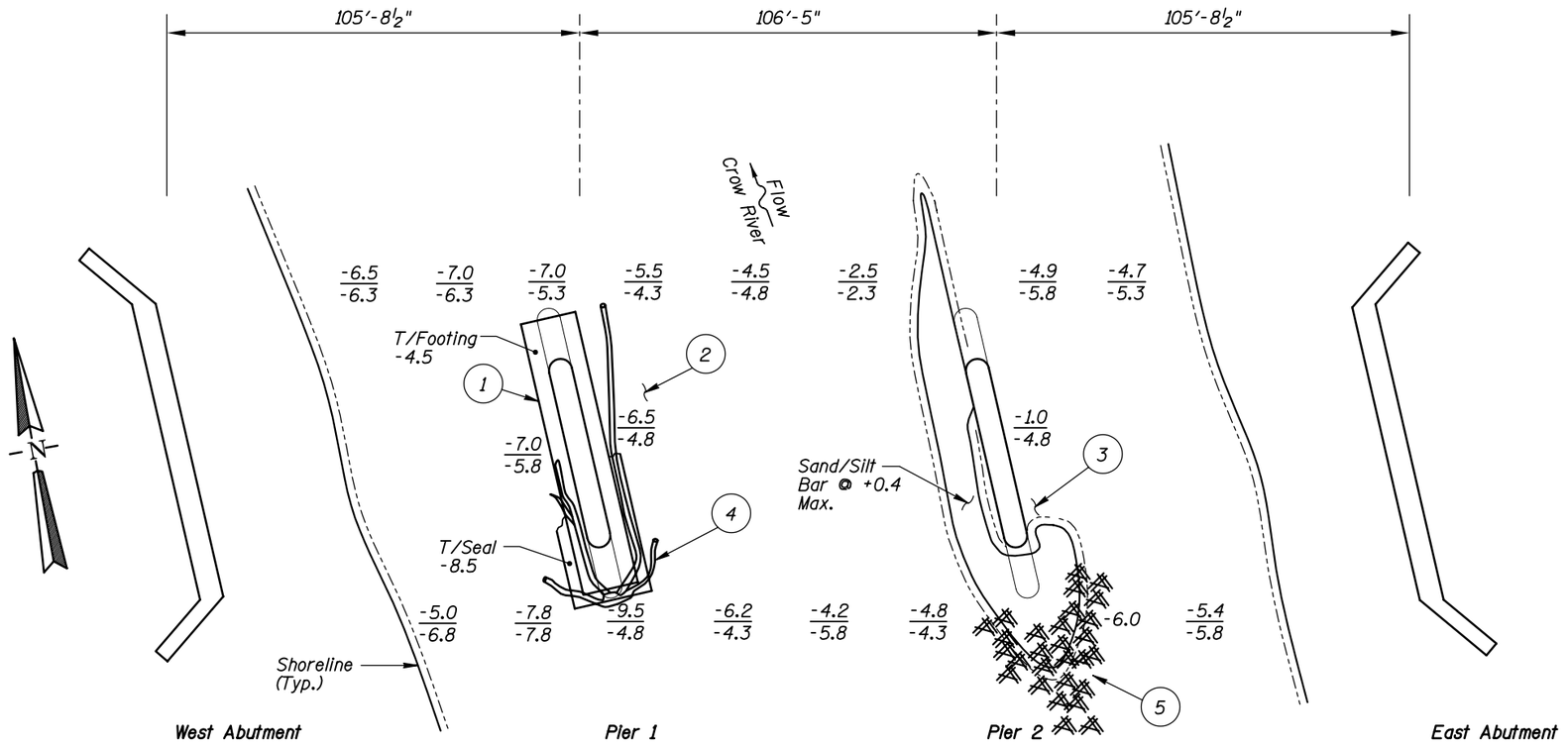
Item 61: Channel and Channel Protection: Code 5

Item 92B: Underwater Inspection: Code B/09/02

Item 113: Scour Critical Bridges: Code U/02

Bridge is scour critical because abutment or pier foundation is rated as unstable due to observed scour at bridge site.

_____Yes ___X__ No



SOUNDING PLAN

GENERAL NOTES:

1. Piers 1 and 2 were inspected underwater.
2. At the time of inspection on September 24, 2002, the waterline was located approximately 27.5 feet below the top of the concrete parapet wall. This corresponds to a waterline elevation of 843.5 based on the previous report dated October 12, 1992.
3. Soundings indicate the water depth at the time of inspection and are measured in feet.
4. Soundings were taken parallel to the bridge at 1/4 point intervals between the substructure units.

INSPECTION NOTES:

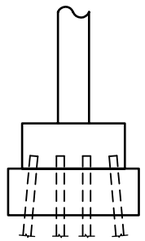
(1) The top of footing was completely exposed around Pier 1 with 2 to 2.5 feet of vertical exposure along the west face and downstream end. The seal coat below the footing (full height of 4 feet of footing exposed) was exposed at the upstream end, to the 1/4 point on the west face, and to the midpoint of the east face with a maximum vertical face exposure of 2 feet at the upstream nose.

(2) The channel bottom consisted of sand at Pier 1.

(3) The channel bottom consisted of silt with up to 2 feet of probe rod penetration.

(4) A tree trunk was observed at the upstream end of Pier 1 with 10-inch-diameter branches extending along both faces of the pier.

(5) A heavy accumulation of timber debris was observed at the upstream end of Pier 2 on the sandbar surrounding part of the pier.



TYPICAL END VIEW OF PIERS

Legend

-4.5 / -4.8 Sounding Depth from Waterline (9/24/02) / (10/12/92)

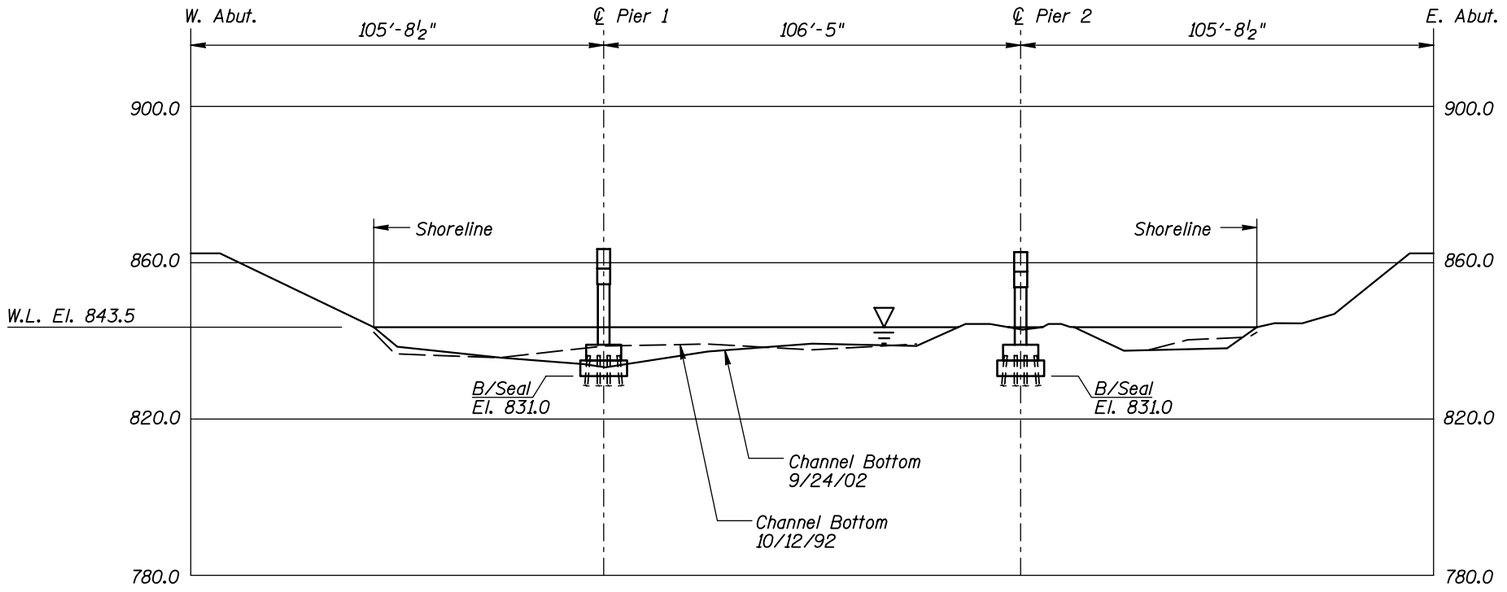
Timber Debris

MINNESOTA
DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

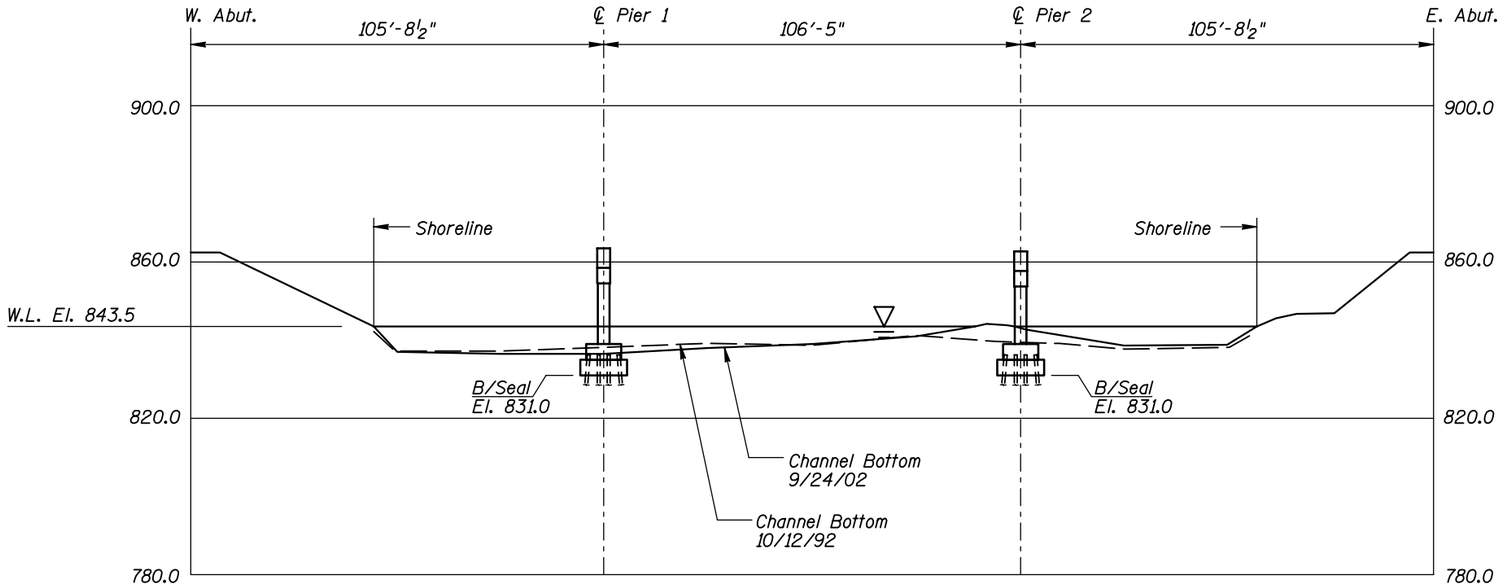
STRUCTURE NO. 27554
OVER THE CROW RIVER
DISTRICT 5, HENNEPIN COUNTY

INSPECTION AND SOUNDING PLAN

Drawn By: PRH	COLLINS ENGINEERS, INC.	Date: SEPT. 2002
Checked By: MDK	300 W. WASHINGTON, STE. 600 CHICAGO, ILLINOIS 60606 (312) 704-9300	Scale: NTS
Code: 35I20108		Figure No.: 1



UPSTREAM FASCIA PROFILE



DOWNSTREAM FASCIA PROFILE

Note:

Refer to Figure 1 for General Notes.

MINNESOTA
DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

STRUCTURE NO. 27554
OVER THE CROW RIVER
DISTRICT 5, HENNEPIN COUNTY

UPSTREAM AND DOWNSTREAM FASCIA PROFILES

Drawn By: PRH	COLLINS ENGINEERS, INC.	Date: SEPT. 2002
Checked By: MDK	300 W. WASHINGTON, STE. 600 CHICAGO, ILLINOIS 60606 (312) 704-9300	Scale: 1"=40'
Code: 35120108		Figure No.: 2

Photograph 1. Overall View of the Structure, Looking South.

Photograph 2. View of Pier 1, Looking East.

Photograph 3. View of Pier 2, Looking West.

Photograph 4. View of Timber Debris at Pier 2, Looking West.

MINNESOTA DEPARTMENT OF TRANSPORTATION
OFFICE OF BRIDGES AND STRUCTURES
DAILY DIVING REPORT

INSPECTORS: Collins Engineers, Inc. DATE: September 24, 2002

ON-SITE TEAM LEADER: Shirley M. Walker, P.E.

BRIDGE NO: 27554 WEATHER: Cloudy, "55E F

WATERWAY CROSSED: The Crow River

DIVING OPERATION: X SCUBA SURFACE SUPPLIED AIR
OTHER

PERSONNEL: Michelle D. Koerbel, Clayton G. Brookins

EQUIPMENT: Scuba, U/W Light, Scraper, Sounding Pole, Lead Line, Probe Rod, Camera

TIME IN WATER: 5:15 P.M.

TIME OUT OF WATER: 6:15 P.M.

WATERWAY DATA: VELOCITY "2 f.p.s.
VISIBILITY "0.5 feet
DEPTH 9.0 feet maximum at Pier 1

ELEMENTS INSPECTED: Piers 1and 2

REMARKS: Overall, the submerged concrete was in good condition with no structurally significant defects observed. Pier 1exhibited footing exposure at the downstream end with up to 2.5 feet of vertical face exposure, and the seal coat below the footing was exposed at the upstream end and along part of each face of the pier with up to 2 feet of vertical face exposure. A heavy accumulation of timber debris was observed upstream of Pier 2 lodged on a sand bar that surrounded part of the pier. A large tree was also observed on the channel bottom at the upstream end of Pier 1 with 10-inch-diameter branches extending along the entire length of both faces of the pier.

FURTHER ACTION NEEDED: X YES _____ NO

Remove the timber drift that has accumulated around the piers including the tree on the channel bottom at Pier 1, which could be contributing to scour and footing exposure, and monitor the footing exposure at Pier 1 during future underwater inspections.

Reinspect the submerged substructure at the normal maximum recommended (NBIS) interval of five (5) years.

MINNESOTA DEPARTMENT OF TRANSPORTATION
OFFICE OF BRIDGES AND STRUCTURES

UNDERWATER INSPECTION CONDITION RATING FORM

BRIDGE NO. 27554
INSPECTORS Collins Engineers, Inc.
ON-SITE TEAM LEADER Shirley M. Walker, P.E.
WATERWAY CROSSED The Crow River

INSPECTION DATE September 24, 2002

NOTE: USE ALL APPLICABLE CONDITION DEFINITIONS AS DEFINED IN THE MINNESOTA RECORDING AND CODING GUIDE INCLUDING GENERAL, SUBSTRUCTURE, CHANNEL AND PROTECTION, AND CULVERTS AND WALL DEFINITIONS TO COMPLETE THIS FORM.

CONDITION RATING

			SUBSTRUCTURE						CHANNEL					GENERAL					
UNIT REFERENCE NO.		MAXIMUM DEPTH OF WATER	PILING	COLUMNS, SHAFTS, OR FACES*	FOOTINGS	DISPLACEMENT	OTHER	OVERALL SUBSTRUCTURE CONDITION CODE*	SCOUR	EMBANKMENT EROSION	EMBANKMENT PROTECTION	OTHER (DRIFT/DEBRIS)	OVERALL CHANNEL & PROTECTION CONDITION	CONCRETE	STEEL	TIMBER	LOSS OF SECTION	PREVIOUS REPAIR OR MAINTENANCE	OTHER
	UNIT DESCRIPTION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
	Pier 1	9.5’	N	8	7	9	N	7	5	8	7	6	5	8	N	N	N	N	N
	Pier 2	1.0’	N	8	N	9	N	8	7	8	7	6	6	8	N	N	N	N	N

*UNDERWATER PORTION ONLY

REMARKS: Overall, the submerged concrete was in good condition with no structurally significant defects observed. Pier 1exhibited footing exposure at the downstream end with up to 2.5 feet of vertical face exposure, and the seal coat below the footing was exposed at the upstream end and along part of each face of the pier with up to 2 feet of vertical face exposure. A heavy accumulation of timber debris was observed upstream of Pier 2 lodged on a sand bar that surrounded part of the pier. A large tree was also observed on the channel bottom at the upstream end of Pier 1 with 10-inch-diameter branches extending along the entire length of both faces of the pier.

NOTES: ATTACH SKETCHES AS NEEDED, IDENTIFY REMARK BY REFERRING TO UNIT REFERENCE NO. AND REMARK NO.
USE GENERAL SECTION TO IDENTIFY OVERALL PRESENCE OF SPALLS, CRACKS, CORROSION, ETC.